

## ORIGINAL ARTICLE

# Resilient Warrior: A Stress Management Group to Improve Psychological Health in Service Members

Resilient Warrior (活力勇士): 改善服务机构人员心理健康的压力管理团队

Resilient Warrior (luchador resistente): Grupo de control del estrés para mejorar la salud psicológica de las fuerzas armadas

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Veteran, resilience, mindfulness, posttraumatic stress disorder symptoms, 3RP

## Disclosures

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## ABSTRACT

**Background:** Many veterans deployed after 9/11/2001 are impacted by subthreshold levels of post-traumatic stress, anxiety, or other psychological health problems that may interfere with successful reintegration. Conventional treatments, including medication and trauma-focused individual psychotherapies, may not be optimally adapted, accepted, or effective to treat these subsyndromal symptoms.

**Methods:** We developed “Resilient Warrior,” a 4-session, group-based, mind-body stress-management and resilience program targeted to build skills and assessed whether its format was accessible and acceptable, and potentially efficacious, to support resilience among service members.

**Results:** From April 2014 to October 2014, 15 participants (53.3% women; mean age=36.6 y; SD=6.2) were surveyed for program acceptability and feasibility and completed self-reported psychological health outcomes before and after program participation. The majority (71.4%) of participants reported that the program included the right number of sessions, and all of them reported that it was helpful and relevant and that they would recommend it to others. While changes in self-reported resilience were only marginal, participation was associated with improvements in depressive symptoms, perceived stress, anxiety, and general sense of self efficacy.

**Conclusion:** These pilot data provide preliminary support that “Resilient Warrior,” a group-based, stress reduction and resilience program, may improve psychological health in service members even when delivered in community settings. Randomized controlled trials with longer follow-up periods are needed to establish efficacy and effectiveness for this program.

## 摘要

**背景:** “9/11”后派遣的许多退伍军人受到了次阈值水平的创伤后应激、焦虑或可能干扰其成功再融入社会的其他心理健康问题影响。常规治疗,包括药物治疗和关注创伤的个体心理治疗,可能并不最佳适应于、被接受或有效治疗这些亚症候症状。

**方法:** 我们开发了 Resilient Warrior 这一项 4 阶段、基于小组的身心压力管理和康复计划,旨在建立技巧并评定其形式是否可理解及可接受以及是否可能有效,以支持服务机构人员康复。

**结果:** 从 2014 年 4 月至 2014 年 10 月,15 名参与者(53.3% 女性;平均年龄 = 36.6 岁;SD=6.2)就计划可接受性和可行性接受研究并且完成参与计划前后的心理健康自我报告结果。大部分(71.4%)参与者报告该计划包括合适次数的课程,并且他们均报告本计划有益并且愿意向其他人推荐。尽管变化自我报告的康复变化仅为最低限度,但是参与过程与抑郁症状、感知压力、焦虑和总体自我效能感改善相关。

**结论:** 这些试验性数据提供以下初步支持: Resilient Warrior 这一基于小组的减少压力和康复计划,可以改善服务机构人员的心理健康,甚至在社区环境下开展时也是如此。需要随访时间更长的随机分组对照试验以确定本计划的疗效和有效性。

## SINOPSIS

**Antecedentes:** Muchos veteranos destacados tras el 11S están afectados por niveles subumbrales de estrés postraumático, ansiedad u otros trastornos psicológicos que podrían interferir en su correcta reintegración. Los tratamientos convencionales, como la medicación y la psicoterapia individual centrada en el trauma, podrían no estar bien adaptados y aceptados o no resultar eficaces a la hora de tratar estos síntomas subsindrómicos.

**Métodos:** Hemos desarrollado Resilient Warrior, un programa de resistencia y control del estrés de 4 sesiones en grupo que combina cuerpo y mente, con el objetivo de desarrollar habilidades y evaluado para comprobar si su formato resulta accesible y aceptable, así como potencialmente eficaz, para aumentar la resistencia de las fuerzas armadas.

**Resultados:** Desde abril hasta octubre de 2014, se encuestó a 15 participantes (53,3 % de mujeres; media de edad = 36,6; DE = 6,2) para evaluar la aceptabilidad y viabilidad del programa. Los participantes

completaron unos cuestionarios de salud psicológica autonotificados antes y después de su participación en el programa. La mayoría de los participantes (71,4 %) respondió que el programa incluía un número adecuado de sesiones, y todos afirmaron que les había resultado útil y apropiado y que se lo recomendarían a otras personas. Aunque

los cambios en la resistencia autonotificada fueron mínimos, la participación en el programa se vio asociada con mejorías de los síntomas de depresión, estrés percibido, ansiedad y sensación general de la propia eficiencia.

**Conclusión:** Estos datos piloto ofrecen un respaldo preliminar del hecho de que el programa de resis-

tencia y reducción del estrés en grupo Resilient Warrior podría mejorar la salud psicológica de los miembros de las fuerzas armadas incluso al llevarse a cabo en ámbitos comunitarios. Es necesario efectuar ensayos controlados y aleatorizados con mayores periodos de seguimiento para determinar la eficacia y efectividad de este programa.

Between 2011 and 2014, more than 2 million service members deployed to Iraq or Afghanistan, often with repeated extended deployments, which can negatively impact service members' psychological health.<sup>1</sup> Although many troops adjust well when returning to civilian life, and do not experience significant mental issues, a sizeable number experience a range of reintegration challenges including sleep problems, re-experiencing symptoms, hyperarousal, behavioral reactions to certain triggers, and relationship and employment difficulties that diminish service members' post deployment functioning.<sup>1-6</sup> In a recent study of 557 Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans, 22.3% met screening criteria for subthreshold posttraumatic stress disorder (PTSD) and 21.5% for full PTSD. Compared to veterans without PTSD, those with subthreshold or full PTSD exhibit significantly greater health and psychosocial difficulties.<sup>7</sup>

Despite high rates of subthreshold postdeployment psychological symptoms and significant negative impact on psychological health, such reintegration challenges often fall outside of the scope of what is typically addressed and detected in healthcare settings.<sup>1</sup> Thus, an increasing number of veterans may not be receiving the care and/or support they need to successfully transition to civilian life. Further, in a study investigating symptoms of OEF/OIF/Operation New Dawn (OND) veterans with subsyndromal PTSD, 36.7% met criteria for clinical depression and 90% endorsed symptoms of arousal; however, only 14% of the sample endorsed symptoms of avoidance, indicating that traditional treatment for PTSD targeting avoidance (ie, Prolonged Exposure, Cognitive-Processing Therapy) may not be as effective for veterans with subsyndromal PTSD whereas treatments targeting comorbid depression and supporting overall wellbeing may.<sup>8</sup>

Mind-body programs offer a low-stigma approach to buffering against the stress of multiple deployments and returning to civilian life and enhancing one's resilience to stress, particularly in the underserved population of service members with postdeployment subthreshold PTSD. Such programs teach ways to manage stress more effectively through meditation, yoga, mindfulness, emotional regulation and cognitive restructuring to improve psychological

health.<sup>9-11</sup> For example, participation in an 8-week mindfulness-based stress reduction (MBSR) course (N=92 veterans) was associated with improved psychological health (PTSD symptoms, quality of life, sleep disturbance) over a 6-month period.<sup>12</sup>

In particular, postdeployment subthreshold PTSD symptoms have been linked to an increased level of autonomic arousal, suggesting that interventions based on the relaxation-response, the counterpart of the stress response may be particularly effective in decreasing them.<sup>13</sup> Relaxation response-based programs (3RP) developed and offered by the Benson-Henry Institute (BHI) for Mind Body Medicine at Massachusetts General Hospital (MGH) in Boston have shown promising results in reducing a range of somatic and psychological symptoms among outpatients with chronic medical symptoms.<sup>14,15</sup> By adapting one of these programs, BHI collaborated with the Red Sox Foundation MGH Home Base Program, a public-private partnership serving post-9/11 veterans with deployment-related distress, to develop a military-based, culturally sensitive, stress-reduction program called "Resilient Warrior."<sup>16</sup>

Resilient Warrior aims to teach relaxation response elicitation techniques relying on the repetition of sound, word, phrase, prayer, or movement and the passive setting aside of intruding thoughts and returning to repetition. In addition, the program also teaches awareness of the stress response and negative thoughts, as well as development of adaptive responses, such as the ability to generate adaptive thoughts, experience pleasure and meaning in life, engage in positive lifestyle behaviors (exercise, nutrition), and enhance a sense of connectedness through social support, acceptance, and empathy.

The Resilient Warrior program was first piloted in the Home Base Program outpatient clinic and then presented to a multidisciplinary group of clinicians, veterans, and military leaders who offered feedback on how the content, length, and use of language could be further adapted for service members. Based on this feedback, the program was shortened from six to four 2-hour weekly sessions for a total of 4 classes, and content was amended to be more military-specific. Resilient warrior was then offered in the community as an educational resilience training program open to post-9/11 veterans regardless of the presence or

absence of psychiatric diagnosis. All participants received a Resilient Warrior workbook and CD with meditation strategies at the beginning of the first class. The present paper reports pilot data on the initial delivery of Resilient Warrior.

## METHODS

### Participants and Procedures

The study was approved by the Institutional Review Board of the Massachusetts General Hospital/Partners for a retrospective review of data collected for program development and educational outcome evaluation (data repository). Participants were recruited from the community and took 1 of 3 Resilient Warrior courses located in Massachusetts between April 2014 and October 2014. The first group was conducted at an Air Force base and the second 2 groups were administered at a community college. Resilient Warrior was advertised as a stress-reduction resilience training program open to any veteran or active service members by flyers and social media, as well as email and mail distribution lists (eg, Massachusetts National Guard). Interested participants completed a semi-structured interview (phone or in-person) with the program instructor for 30 minutes to assess their interest and ability to attend the program. For example, individual's personal goals were discussed to ensure that they aligned with the program or that the participant understood and had realistic expectations of the program. The instructor also assessed the participant's ability to sit in a group and their commitment to attend the program. As a naturalistic trial of acceptability, feasibility, and stress reduction, participants were not required to have a diagnosis of PTSD or other disorder. Course instructors were trained by BHI through coursework, experiential learning (observing and participating in mind-body programs), supervision, and observed teaching. While 40 individuals completed the program across 2 groups, we examined the 15 participants for whom completed pre and post linked data were available. The missing data was due to poor labeling of paper surveys. However, the labeling error was a random administrative error and not linked to participant characteristics—those who were included in the analyses did not differ from those who were not on any of the baseline variables (including age, gender, military status, branch of service, number of deployments; all  $P$  values  $>.138$ ), except marital status, with individuals included in the analysis being more likely to be married than those not included (80% vs 12%,  $P <.001$ ). Assessment included pre- and post-program surveys, as well as a pre-program demographic and stressors form and a post-program evaluation form. All data were completed in paper and pencil at the course location (ie, the first 10-15 minutes of the first session and the last 10-15 minutes of the last session) and then manually entered by trained study staff at the Home Base Program and stored on their secure server.

### Assessments

The Patient Health Questionnaire-8 was used to assess the presence and severity of depressive symptoms. Items were scored on a 4-point likert scale (“not at all” to “nearly every day”), with increased total scores indicating increased depressive symptom severity.<sup>17</sup> The instrument has been found to exhibit good reliability (Cronbach  $\alpha=.82$ ).<sup>18</sup> The Generalized Anxiety Disorder-7 questionnaire was used to assess anxiety symptom severity.<sup>19</sup> Items were scored on a 4-point likert scale (“not at all” to “nearly every day”), with increased total scores indicating greater anxiety. The instrument has been well validated (Cronbach  $\alpha=.92$ ).<sup>19</sup> The 10-item Perceived Stress Scale (PSS) was used to assess participants' perception of stress.<sup>20</sup> Items were scored on a 5-point scale (“never” to “very often”) and a composite score could be obtained by reverse scoring the 4 positively stated items and then summing all, with higher scores indicating a greater perceived stress. The PSS-10 has demonstrated good reliability as well as internal consistency (Cronbach  $\alpha=.84-.86$ ).<sup>20</sup> The General Self-Efficacy Scale is a 10-item self-report questionnaire assessing perceived self-efficacy or one's belief in one's ability to complete tasks and accomplish their goals.<sup>21</sup> Items are scored on a 1 to 4 likert scale (“not at all true” to “exactly true”) and are summed to yield a total score with greater scores indicating greater self-efficacy. High internal consistency ratings have been found with  $\alpha$ s between .82 and .93.<sup>22</sup> The 14-item Resilience Scale was used to assess how well an individual copes with change or adverse events.<sup>23</sup> The Resilience Scale measures 5 core characteristics of resilience: meaningful life, perseverance, self reliance, equanimity, and existential aloneness. Items are scored from 1 to 7 (“strongly disagree” to “strongly agree”) and are summed to yield a total score (higher scores indicate higher resiliency). The instrument has good reliability and validity with  $\alpha$ s between .76 and .91.<sup>23</sup>

### Statistical Analyses

Paired  $t$ -tests were conducted to determine change in outcome measures from pre- to post-course completion and also report effect sizes (Cohen's  $d$ ). Descriptive statistics were used for sociodemographic characteristics as well as for questions pertaining to acceptability. All analyses were conducted with STATA version 12.1 (StataCorp, College Station, Texas). The level of statistical significance was set to  $P <.05$  (2-tailed).

## RESULTS

The mean age of participants was 36.64 years ( $SD=1.65$ ). The majority of participants were female (53.33%), married (80%), active duty (50%), in the Army (93.3%), and had at least 1 overseas deployment (80%) (Table 1).

Overall, despite relatively low levels of symptoms at baseline, participants exhibited medium effect size changes in symptoms pre- to post-program (Cohen's  $d$

**Table 1** Demographic Characteristics of Resilient Warrior Participants With Paired Data<sup>a</sup>

	N	Mean ± SD or % (n)
Age, y	14	36.64 ± 1.65
Female	15	53.30% (8)
Marital status	15	
Married		80.00% (12)
Divorced		6.67% (1)
Never married		13.33% (2)
Military status	14	
Active duty		50.00% (7)
Retired		21.42% (3)
National Guard		21.42% (3)
Activated reserve		7.14% (1)
Service Branch	15	
Army		93.3% (14)
Air Force		6.66% (1)
Overseas deployment	15	80.00% (12)
Number of deployments	12	2.17 ± 1.34

<sup>a</sup> Some participants chose not to answer every demographic question, explaining the variation in sample size.

ranging 0.55-0.65) that were significant for depressive symptoms and perceived stress, and marginally significant for anxiety symptoms and self-efficacy (Table 2). However, there was virtually no change in resilience as measured by the Resilience Scale during the course of our 4-week program (Table 2).

In terms of acceptability, all participants (100%) felt comfortable during the group as reported on the post-course evaluation form. More than two-thirds (71.4%) of participants reported that the course consisted of the right number of sessions, while the remainder felt that there were too few sessions and all (100%) reported that the length of the sessions was optimal. Further, all participants reported that the course was very helpful or somewhat helpful, that it was very or somewhat relevant, and that they would recommend it to other service members.

## DISCUSSION

Initial evaluation of the Resilient Warrior program, including preliminary feasibility and acceptability and efficacy data, support a potential role for improving psychological health in service members. Our preliminary data suggest that a 4-week relaxation-response resilience program adapted to military culture might improve symptoms of depression, perceived stress, anxiety, and self-efficacy in veterans and service members, with effect sizes in the medium to large range. Our data are consistent with similar findings from the US Department of Defense-sponsored Battlemind Training program that found that a brief intervention, or even a single session, postdeployment, could improve psychological health.<sup>24</sup>

Despite promising findings on many facets of psychological health, we did not find that our self-rated measure of resilience improved over the Resilient Warrior program. It may be that resilience requires more time to change and our program evaluation did not include a follow-up session. For example, the 5 core characteristics of resilience (meaningful life, perseverance, self-reliance, equanimity, existential aloneness) could take ongoing reflection and practice of skills over time to change. It is also possible that other modalities may be beneficial to further impact one's resilience, but the best supporting evidence for improving resilience (meditation, mindfulness, and progressive muscle relaxation) are included in this program.<sup>25</sup> Finally, we also need a new assessment of resilience, as it has been considered a difficult construct to measure.<sup>26</sup> A resilience measure specific to military populations may also be beneficial. Further research should thus evaluate the long-term impact of Resilient Warrior.

Our initial pilot data support that Resilient Warrior was acceptable and well tolerated. Specifically, participants generally had positive perceptions of the course including the length of sessions, content, and its delivery. Perhaps most importantly, all participants stated that they would recommend it for other service members.

These data should be considered in light of several limitations. First, our study relied on self-report data primarily collected for program evaluation of an

**Table 2** Change in Outcomes Over Resilient Warrior Program

	Pre-course		Post-course		t (df <sup>a</sup> )	P	Cohen's d
	Mean	SD	Mean	SD			
PHQ, range: 0-24	6.36	5.21	4.5	3.72	2.25 (13)	.04	0.60
GAD-7, range: 0-21	8.43	6.89	5.36	2.90	2.05 (13)	.06	0.55
PSS, range 0-40	22.62	7.41	19.46	4.41	2.25 (12)	.04	0.62
GSE, range 10-40	28.73	4.20	31.36	5.99	-2.16 (10)	.06	0.65
RS, range 14-98	77.42	16.05	76.75	16.82	0.18 (11)	.86	0.05

Abbreviations: GAD-7, generalized anxiety disorder-7 scale; GSE, general self-efficacy scale; PHQ, patient health questionnaire; PSS, perceived stress scale; RS, resiliency scale.

<sup>a</sup> Only participants with complete data were included in the analyses; thus degrees of freedom vary between outcomes.

uncontrolled open naturalistic delivery of our program. In addition, our sample was not formally assessed for the presence of psychiatric disorders or for trauma experiences, and there were no specific inclusion or exclusion criteria other than willingness to participate and ability to manage a group program. We included in the analyses only a subset of the 40 participants who completed the program with intact linked data ( $n=15$ ). The only significant difference was that included respondents were more often married. This may have skewed the study group to those with higher baseline resilience, making impact of the intervention more difficult to show. Finally, there was no long term follow-up.

Overall, our data suggest that the brief Resilient Warrior program may be feasible and acceptable, with preliminary data on its efficacy in improving psychological health in veterans and service members even when it is delivered in the community without specific diagnostic screening or exclusion criteria. Randomized controlled trials and longer follow-up periods are needed to determine the efficacy of this intervention.

#### REFERENCES

- Sayer NA, Carlson KF, Frazier PA. Reintegration challenges in U.S. service members and veterans following combat deployment. *Soc Issues Policy Rev.* 2014;8(1):33-73.
- Institute of Medicine. Returning home from Iraq and Afghanistan: Preliminary assessment of readjustment needs of veterans, service members and their families. Washington, DC: National Academies Press; 2010.
- Bonanno GA, Mancini AD, Horton JL, et al. Trajectories of trauma symptoms and resilience in deployed U.S. military service members: Prospective cohort study. *Br J Psychiatry.* 2012;200:317-23.
- Marshall RD, Olsson M, Hellman F, et al. Comorbidity, impairment, and suicidality in subthreshold PTSD. *Am J Psychiatry.* 2001;158(9):1467-73.
- Seal KH, Metzler TJ, Gima KS, et al. Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002–2008. *Am J Public Health.* 2009;99:1651-8.
- Hoge CW, Castro CA, Messer SC, et al. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med.* 2004;351(1):13-22.
- Pietrzak RH, Goldstein MB, Malley JC, et al. Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of operations enduring freedom and Iraqi freedom. *Depress Anxiety.* 2009;26(8):739-44.
- Kornfield SL, Klaus J, McKay C, et al. Subsyndromal posttraumatic stress disorder symptomatology in primary care military veterans: treatment implications. *Psychol Serv.* 2012;9(4):383-9.
- Kabat-Zinn J. Mindfulness-based interventions in context: past, present, and future. *Clin Psychol.* 2003;10(2):144-56.
- Kabat-Zinn J. Full catastrophe living: using the wisdom of your body and mind to face stress, pain and illness. New York, NY: Delacorte; 2009.
- Jacobs GD, Benson H, Friedman R. Perceived benefits in a behavioral-medicine insomnia program: a clinical report. *Am J Med.* 1996;100(2):212-6.
- Kearney D, McDermott K, Malte, et al. Association of participation in a mindfulness program with measures of PTSD, depression, and quality of life in a veteran sample. *J Clin Psychol.* 2011;68(1):101-16.
- Follett VA, Vijay A. Mindfulness for trauma and posttraumatic stress disorder. In: Fabrizio D, editor. *Clinical handbook for mindfulness.* New York: Springer; 2009: 299-317.
- Samuelson M, Foret M, Baim M, et al. Exploring the effectiveness of a comprehensive mind-body intervention for medical symptom relief. *J Altern Complement Med.* 2010;16(2): 187-92.
- Vranceanu AM, Gonzalez A, Niles H, et al. Exploring the effectiveness of a modified comprehensive mind-body intervention for medical and psychologic symptom relief. *Psychosomatics.* 2014;55(4):386-91.
- Park ER, Traeger L, Vranceanu A, et al. The development of a patient-centered program based on the relaxation response: The relaxation response resiliency program (3RP). *Psychosomatics.* 2012;54(2):165-74.
- Kroenke K, Spitzer RL. The PHQ-9: A new depression diagnostic and severity measure. *Psychiatr Ann.* 2002;32(9):509-21.
- Pressler SJ, Subramaniam U, Perkins SM, et al. Measuring depressive symptoms in heart failure: Validity and reliability of the patient health questionnaire-8. *Am J Crit Care.* 2011;20(2):146-52.
- Spitzer RL, Kroenke K, Williams JBW, et al. A brief measure for assessing generalized anxiety disorder: The GAD-7. *Arch Intern Med.* 2006;166(10):1092-7.
- Cohen S, Karmarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav.* 1983;24:385-96.
- Scholz U, Guitierrez-Dona B, Sud S, et al. Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *Eur J Psychol Assess.* 2002;18(3):242-51.
- Schwarzer R, Jerusalem M. Generalized self-efficacy scale. In: Weinman J, Wright S, Johnston M, editors. *Measures in health psychology: A user's portfolio. Causal and control beliefs.* Windsor, UK: NFER-Nelson; 1995:35-7.
- Wagnild GM, Young HM. Development and psychometric evaluation of the resilience scale. *J Nurs Meas.* 1993;1(2):165-78.
- Adler AB, Castro CA, McGurk, D. Time-driven battlemind psychological debriefing: a group-level early intervention in combat. *Mil Med.* 2004;174(1):21-8.
- Rees B. Overview of outcome data of potential mediation training for soldier resilience. *Mil Med.* 2011;176(11):1232-42.
- Schetter CD, Dolbier C. Resilience in the context of chronic stress and health in adults. *Soc Pers Psychol Compass.* 2011; 5(9): 634-52.